Oxidative stability of electrospun nanofibers loaded with fish oil

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BOOK OF ABSTRACTS

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European Young Lipid Scientist Award Lecture: Oxidative Stability of Electrospun Nanofibers Loaded with Fish Oil

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In order to successfully produce food enriched with omega-3 PUFA, lipid oxidation of these highly unsaturated fatty acids must be prevented. Therefore, the development of omega-3 PUFA delivery systems, which are easy to disperse and which will lead to improved oxidative stability of omega-3 enriched food products, is required. One of the more promising delivery systems, and an alternative to fish oil-in-water emulsions and microencapsulates, are nanofibers loaded with fish oil and obtained by electrospinning technology.

In the light of the above, the aim of this work was to investigate the oxidative stability of omega-3 enriched nanofibers produced by electrospinning of fish oil-in-water emulsions using poly(vinyl alcohol) (PVA) as biopolymer. The solutions for electrospinning were characterized in terms of droplet size and viscosity. The morphology of the nanofibers was evaluated by scanning electron microscopy, whereas the oxidative stability of the nanofibers was monitored by determining the formation of lipid hydroperoxides and volatiles oxidation products.